IN THE CLAIMS

1. (Previously presented) System for determining a position of a transponder, which transmits a signal and moves along a route with at least a measuring station comprising antenna means for receiving said signal at least at two measuring points positioned at the two outer points of a line segment which crosses the course in a perpendicular manner, wherein said measuring station comprises:

- a first receiver for receiving said signal through said antenna means at the one measuring point,
- a second receiver for receiving said signal through said antenna means at the other measuring point,
- high frequency phase measuring means measuring the phase difference between the output signal of the first receiver and the output signal of the second receiver,
- evaluation means which, based on the measured phase difference, determines where the transponder passes said line segment.

2. (Currently Amended) System according to claim 1, wherein the transponder transmits a modulated signal, that the first receiver is followed by a first demodulator for demodulating the received signal, that the second receiver is followed by a second demodulator for demodulating the received signal, and wherein the system further comprises a second phase measuring unit adapted to operate at a frequency lower than the first-mentioned phase measuring means to measure the phase difference between the output signal of the first demodulator and the output signal of the second demodulator.

3. (Currently Amended) System according to claim 2, wherein the evaluation means use the output signal of the low frequency phase measuring means for coarse position determination whereas the

output signal of the high frequency phase measuring means is used for fine position ~~determining~~determination.

4. (Previously presented) System according to claim 2, wherein the modulated signal is obtained by amplitude modulation whereby the modulation signal is a pulse series by means of which the amplitude of the carrier wave is modulated between 0% and 100%.

5. (Previously presented) System according to claim 1, wherein that between both ends of said line segment another N measuring points are realized such that the line segment is divided by N+2 measuring points into N+1 segments each having a length which is small enough to realize an unambiguous measurement within said segment, whereby the N+2 measuring points are connected to N+2 receivers, the output of each of said receivers is connected to a field strength measuring means, the output signals of all field strength measuring means are evaluated in a comparison circuit, which comparison circuit transfers the output signals of those two receivers having together the largest field strength, to a phase comparator to be mutually compared whereafter the resulting output signal of the phase comparator controls an evaluation unit.

6. (Previously presented) System according to claim 1, wherein the system comprises an elongated loop antenna comprising two parallel antenna conductors extending a short mutual distance and having a length equal to the length of said segment, which antenna conductors are connected at their ends where the measuring points are formed.

7. (Previously presented) System according to claim 5, wherein the antenna is built as a series circuit of N+1 small loop antennas each comprising two parallel antenna conductors extending at short

mutual distance of which the ends are interconnected, which loop antennas are in length direction coupled to each other.

8. (Currently Amended) System according to claim 1, wherein the system is adapted such that the measurement is repeated a number of times in a row, whereafter the results are interpolated such that from the results the track can be derived which was followed by the transponder within said ~~coarse~~ course.

9. (New) A system for determining a position of a transponder, which transmits a signal and moves along a route, the system comprising:

an antenna assembly having a first point of measurement and a second point of measurement, the points of measurement configured to define a line segment which crosses the course in a perpendicular manner, the antenna assembly adapted to receive said signal at each point of measurement;

a first receiver coupled to the antenna assembly and adapted to provide a first output signal based on said signal as received at the first point of measurement;

a second receiver coupled to the antenna assembly and adapted to provide a second output signal based on said signal as received at the second point of measurement;

a phase measuring unit coupled to the first receiver and the second receiver, the phase measuring unit adapted to provide a phase output signal based on a phase difference between the first output signal of the first receiver and the second output signal of the second receiver; and

an evaluation unit coupled to the phase measuring unit and adapted to determine a position of the transponder

along the line segment based on the phase output signal.

10. (New) The system according to claim 9, wherein the transponder is adapted to transmit a modulated signal by amplitude modulation whereby the modulated signal is a pulse series where the amplitude of the carrier wave is modulated between 0% and 100%, and wherein the system further comprises:

a first demodulator coupled to the first receiver and adapted to demodulate the first output signal;

a second demodulator coupled to the second receiver and adapted to demodulate the second output signal; and

a second frequency phase measuring unit coupled to the first and second demodulators and adapted to measure a phase difference between an output signal of the first demodulator and an output signal of the second demodulator and adapted to operate at a frequency lower than the first-mentioned phase measuring unit.

11. (New) The system according to claim 10, wherein the evaluation unit is adapted to use the output signal of the second phase measuring unit to determine a coarse position and wherein the evaluation unit is adapted to use the output signal of the first-mentioned phase measuring unit to determine a fine position.

12. (New) The system according to claim 9, wherein the antenna assembly has N points of measurement between both ends of said line segment such that the line segment is divided by N+2 points of measurement into N+1 segments each having a length which is small enough to realize an unambiguous measurement within said segment, and wherein the system further comprises:

N+2 receivers in total, wherein a receiver is coupled to a point of measurement and adapted to provide a

corresponding output signal based on said signal as received at each point of measurement;

a field strength measuring assembly adapted to receive each of the output signals and provide a corresponding output signal of field strength; and

a comparison circuit adapted to receive the output signals of field strength and adapted to determine the output signals of those two receivers having together the largest field strength and adapted to provide said output signals to the phase measuring unit.

13. (New) The system according to claim 9, wherein the antenna assembly comprises an elongated loop antenna comprising two parallel antenna conductors extending a short mutual distance and having a length equal to the length of said segment, which antenna conductors are connected at their ends where the first and second points of measurement are formed.

14. (New) A method for determining a position of a transponder, which transmits a signal and moves along a route, the method comprising:

providing a first signal based on said signal as received at a first point of measurement;

providing a second signal based on said signal as received at a second point of measurement, the second point of measurement being positioned relative to the first point of measurement to define a line segment which crosses the course in a perpendicular manner;

measuring a phase difference between the first signal and the second signal; and

determining a position of the transponder along the line segment based on the measured phase difference of the first and second signals.

15. (New) The method according to claim 14, wherein the transponder is adapted to transmit a modulated signal by amplitude modulation whereby the modulated signal is a pulse series where the amplitude of the carrier wave is modulated between 0% and 100%, and wherein the method further comprises:

demodulating the first signal;

demodulating the second signal; and

measuring a phase difference between the demodulated first signal and the demodulated second signal.

16. (New) The method according to claim 15, wherein determining a position comprises:

determining a coarse position based on the phase difference between the demodulated first signal and the demodulated second signal; and

determining a fine position based on the phase difference between the first signal and the second signal.

17. (New) The method according to claim 14 and further comprising:

providing an antenna assembly having N points of measurement between both ends of said line segment such that the line segment is divided by N+2 points of measurement into N+1 segments each having a length which is small enough to realize an unambiguous measurement within said segment;

wherein providing the first signal based on said signal as received at the first point of measurement and providing the second signal based on said signal as received at the second point of measurement comprises providing N+2 signals in total based on said signal as received at each of the N+2 points of measurement;

measuring a field strength at each of the N+2 points of measurement; and

determining those two signals having together the largest field strength; and

wherein determining the position of the transponder along the line segment comprises using those two signals having together the largest field strength.

18. (New) The method according to claim 14 and further comprising providing an antenna assembly including an elongated loop antenna having two parallel antenna conductors extending a short mutual distance and having a length equal to the length of said segment, which antenna conductors are connected at their ends where the first and second points of measurement are formed.